

REMARKS

Claims 47, 49-51, 53-67 and 75-92 are pending in the application. By this Amendment claims 58, 75, 83, 85, 86, 88, 90 and 91 have been amended; claims 82 and 87 have been cancelled; and new claims 93 and 94 added. It is believed that all claims as now presented overcome the rejections of record and present patentable subject matter for which allowance is respectfully requested.

Claim Amendments

By the foregoing amendments, claims 58, 75, 85, 86, and 90 have been amended to make editorial corrections and clarifications. The substance of these claims has not been changed.

Claims 83 and 88 have been amended to recite that the plurality of Fresnel lenses are in a side-by-side relationship as shown in Fig. 1.

Claim 91 has been amended to add the presence of the cover panel: an element also shown in Fig. 1.

New claims 93 and 94 have been added to specifically claim the backlight apparatus itself.

No new matter is entered as all amendments are fully supported by the specification as filed.

NON-ART REJECTIONS

§112 Rejection

Claims 83 and 88 stand rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim that which Applicant regards as the invention. According to the Examiner, the written disclosure does not describe that the second panel comprises an array of Fresnel lenses: Fig. 1 only showing a plurality of lenses.

In light of the amendment to claims 83 and 88, the rejection is moot. Applicant has removed the recitation to the array and now specifies that the Fresnel lenses are in a side-by-side relationship as shown in Fig. 1.

Objections

Claims 85, 86, 90 and 91 are objected to as failing to provide sufficient antecedent bases, in the claims and/or the specification, for certain of the elements claimed therein. By the

foregoing amendments. Applicant has provided the proper antecedence and/or corrected the error specified.

In light of the foregoing, it is believed that the claims as now presented are in proper form for allowance and early and favorable reconsideration is respectfully requested.

ART REJECTIONS

Johnson et. al. in view of Garwin et. al.

Claims 47, 49, 50, 55, 56, 58-63, 75-78, 80-83, 87, 88 and 92 stand rejected under 35 USC §103(a) as being unpatentable over Johnson et. al. (US 6,439,731, hereinafter "Johnson") in view of Garwin et. al. (US 5,949,402, hereinafter "Garwin"). Johnson is said to disclose an LCD or organic display having uniform, high intensity backlighting, wherein said backlighting is provided by an illumination apparatus comprising:

- a first panel 10 comprising a grid of high intensity light point sources 12 (LEDs);
- a diffuser panel 20, the light passing directly from the point sources 12 to the diffuser panel 20; and
- a display panel 18, wherein each panel defines a plane overlaying and parallel to one another in sequence.

Johnson is said to disclose that the diffuser panel 20 converts light from the light point source into a more uniform glow across the surface of the LCD panel 18 so as to obtain a more uniform illumination of the LCD panel over a relatively wide range of viewing angle. However, Johnson is acknowledged as failing to disclose a second panel comprising Fresnel lenses wherein the first panel, the second panel and the diffuser panel each define parallel, overlaying, sequential planes.

Figure 4 of Garwin is said to disclose an optical pointing device comprising a first panel 23 comprising LED light sources 21, a second panel 20 comprising a panel comprising Fresnel lens 20, and a diffuser panel 26, the light passing directly from the point light source 21 to the Fresnel lens 20, and, subsequently, to the diffuser panel, each panel parallel to and overlaying the other.

According to the Patent Office, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the illumination apparatus of Johnson with the

teaching of Garwin by having a second panel comprising Fresnel lenses, wherein the first panel, the second panel and the diffuser panel overlay each other in sequence in order to improve the optical alignment and optical beam profiles of the LEDs; thereby improving the accuracy of the apparatus and obtaining a satisfactory performance without costly LED selection. It is also asserted that with this modification, it is also obvious that the structure is substantially identical to the presently claimed structure and provides a uniform high intensity backlighting to the display panel.

Re: claims 47 and 60, Johnson is said to disclose that the LEDs are aligned in a plurality of rows and columns.

Re: claims 49 and 62, Johnson is said to disclose that the first panel comprises a grid of LEDs and a reflective background.

Re: claims 50 and 63, Johnson is said to disclose that the first panel has a white background.

Re: claims 59 and 76, Johnson is said to disclose that the high intensity light point sources are LEDs.

Re: claims 61 and 77, Johnson is said to disclose that the first panel 10 comprises a grid of high intensity light sources 12 and a reflective background.

Re: claim 78, Johnson is said to disclose that the first panel comprises a grid of high intensity light sources and a white background.

Re: claims 55, 56, 80, 81 and 92, Johnson is said to disclose that the display panel 18 is an LCD display panel, which is a flat panel display. In following, it is asserted that such devices are well known and employed in a number of applications including as televisions or other than televisions.

Re: claim 82 and 87, Garwin is said to disclose that the Fresnel lens corresponds with four LEDs; meanwhile Johnson shows a plurality of LEDs in rows and columns. According to the Examiner, with modification, it is obvious to employ a panel of a plurality of Fresnel lenses to correspond to the plurality of LEDs.

Re: claims 83 and 88, Johnson is said to disclose that the first panel comprises an array of LEDs. According to the Examiner, with modification, it is obvious that the second panel comprise an array of Fresnel lenses corresponding to the array of LEDs.

Applicant respectfully traverses the rejection and requests reconsideration.

It is well established in Patent Law that a case of *prima facie* obviousness requires some impetus, whether a teaching, suggestion, motivation or another factor, to make the proposed change to the state of the art to arrive at the claimed invention **and** an expectation of success as to the outcome. Such is not present in the rejection as set forth by the Examiner.

It is also well established in Patent Law that a proposed modification to a reference cannot render the reference unsuitable for its intended objective or function; otherwise, the proposed modification is inappropriate and cannot establish *prima facie* obviousness.

Johnson teaches a backlighting apparatus for an LCD display wherein the apparatus comprises a PCB circuit board having electronic circuitry on one side and an array of a plurality of LEDs on the other in combination with an optical diffusion panel overlaying the LEDs, intermediate the PCB and the LCD display panel. According to Johnson this configuration overcomes the cost and difficulty associated with the use of incandescent, florescent and conventional LEDs already in use for such applications, especially in terms of the lack of uniformity and manifestation of “hot spots” in the prior art backlight illuminations and addresses the asserted long-felt need for practical low cost, thin and low profile, backlit, large display LCD devices having long life, a high degree of illumination uniformity and simple brightness adjustment circuitry.

The key to the success of Johnson is two-fold. The first critical aspect of Johnson is the use of an array of closely spaced LEDs mounted on a PCB panel. The second critical element is the presence of a simple, low cost brightness adjusting circuitry on the opposite side of the PCB panel for adjusting the brightness or intensity of the LED lights. Although this configuration is said to provide “superior display uniformity,” Johnson also teaches the use of a diffuser panel to further soften and provide a more uniform appearance to the backlight illumination. Although, as underlined above, the Examiner infers that the light of Johnson is of high intensity, there is nothing to suggest that it is. Rather, intensity of the light of Johnson is controlled by the adjustment circuitry; not as taught by Garwin or Applicant, by the use of lenses which collect the known dispersed or diffused light of the LED, as well as that reflected off the base panel upon which the LEDs are set, and which combine and redirect the light in the form of intensified, directed light emissions. Clearly, while Johnson can adjust intensity by controlling power to the LEDs, it does not create the high intensity

light as enabled by the use of the Fresnel lenses. Indeed, as acknowledged by the Examiner, Johnson makes no mention of a Fresnel lens, let alone a panel of Fresnel lenses.

To address this shortcoming in the teachings of Johnson, the Examiner points to Garwin as providing the motivation or impetus for adding a panel of Fresnel lenses to the apparatus of Johnson. Yet, no such motivation or reasoning for the claimed modification is apparent.

Admittedly, (upon further reflection) Garwin teaches the use of either one or two Fresnel lenses (as an optional replacement of its preferred conventional lens) for purposes of creating a broader beam of light than attainable with the more focused conventional lens. However, Garwin clearly forewarns about the reintroduction of issues associated with the LEDs sought to be addressed by the use of the conventional lens when using Fresnel lenses and indicates that any correction sought to be addressed by the Fresnel lens be kept to a minimum. Furthermore, when Garwin does employ two Fresnel lenses, the lenses overlay one another with a diffuser panel intermediate the two. Contrary to the assertions of the Examiner, as emphasized by the underlining above, Garwin in no way suggests nor motivates one to use a panel of lenses, especially not a panel having a plurality of Fresnel lenses, and most certainly not a panel of Fresnel lenses in a side-by-side relationship, nor are any of these iterations obvious therefrom.

In setting forth the grounds for the rejection, the Examiner infers or at least suggests that there is a correlation between the number of LED lights and the number of lenses: stating that since Garwin teaches the use of one lens for every four LEDs and since Johnson has many more LEDs, it would be obvious to employ a correspondingly higher number of lenses. (See e.g. the rejection of claims 82 and 87) However, this is an absurd and unfounded statement and, in any event, is contrary to teaching and objectives of each reference.

Garwin's objective and teaching is to create a single high intensity light beam from a plurality of LED elements for use as a pointing means wherein the high intensity beam is attained by the use of a lens element which captures and focuses the otherwise dispersed or diffuse light of the LEDs into a single beam. Although, as noted, the preferred lens is the bi-convex lens of Fig. 4, as shown in Fig. 12, Garwin also teaches the suitability of a single or two opposing Fresnel lenses in order to generate a somewhat broader light beam. In this regard, Garwin takes advantage of the known properties of Fresnel lenses for capturing and

directing the collected light in a more perpendicular, to the plane of the light emitting surface, direction. However, again, as noted above, Garwin cautions against their use.

Regardless, it is clear that Garwin's use of lesser or greater numbers of LEDs does not, as inferred by the Examiner, suggest the need for a plurality of lenses. Indeed, Garwin specifically indicates that three, four or more lenses can be used; but make no mention whatsoever of multiple lenses. Indeed, such would not be desirable as multiple lenses would generate multiple high intensity beams of light, whereas the objective of Garwin is a single beam of light to be used as a pointer. Instead, Garwin teaches that one looks toward a reconfiguration of the alignment and orientation of the LEDs and/or, perhaps, a smaller or larger lens. Indeed, Garwin goes on and on about the proper orientation and alignment of the LEDs for maximizing the light intensity and focus. Thus, contrary to the assertion of the Examiner, Garwin does not provide any motivation, suggestion or other impetus to employ a panel of a plurality of lenses as it would defeat the very objective of Garwin.

Having failed to show or provide any motivation for the creation of a panel of Fresnel lenses, the combination of Garwin and Johnson, as sought by the Examiner, likewise fails as the panel of Fresnel lenses is critical to the Examiner having any hope of trying to establish prima facie obviousness. Regardless, even if one were to somehow justify the modification of Garwin so as to create a panel of a plurality of Fresnel lenses, there is still no reason or impetus to combine it with Johnson.

As discussed above, Johnson's objective is to provide uniform backlighting for an LCD. Johnson has found that by overlaying a panel comprising an array of closely spaced LEDs with a diffuser panel one is able to provide uniform backlighting while avoiding the creation of "hot spots" or high intensity light patterns: a detriment manifesting in prior efforts to form LED backlighting as explicitly taught in Pelka (US 6,007,209) and as discussed in the background section of Johnson. However, based on Garwin's teaching that the use of the biconvex or Fresnel lens concentrates and intensifies the light of the LEDs thereby creating discrete beams of high intensity light, the expectation of adding a panel of Fresnel lenses to the apparatus of Johnson is that one would create multiple beams of high intensity light, thereby reintroducing "hot spots." Although raised by Applicant previously, the Examiner seems to merely dismiss this premise as being unfounded. Yet Pelka quite clearly teaches that the use of a diffuser panel with unshielded LEDs is unable to avoid the manifestation of

hot spots in the display screen. Accordingly, inasmuch as a diffuser panel is unable to prevent an unshielded LED from creating a hot spot, one could hardly expect a diffuser panel to be able to prevent the manifestation of a hot spot arising from an intensified beam of light from a plurality of LEDs. Accordingly, there is no motivation or impetus to add a panel of a plurality of Fresnel lenses to the construct of Johnson. If anything, the motivation or teaching is away from such a construction. Specifically, one skilled in the art, in view of Garwin and Pelka, would know not to use Fresnel lenses in Johnson. Furthermore, even if one were to try, for the sake of trying, there would certainly be no expectation of a successful result in accordance with Johnson's objective.

As noted above, modifying a reference in a manner that would defeat or render unsuitable or would be expected to defeat or render unsuitable the thing so modified for its original purpose or use is not a proper or allowable combination of references. Here, the proposed modification would be seen to or expected to render Johnson inappropriate for its intended use. Furthermore, in any event, a finding of prima facie obviousness also requires an expectation of success. Clearly, as noted from the above, there was no expectation of success. Indeed, Applicant was surprised to find that the specific combination of the array of LEDs, the panel of a plurality of Fresnel lenses and the diffuser panel did in fact provide a high intensity, uniform backlight illumination.

In view of the foregoing, it is clear that the Examiner has failed to establish prima facie obviousness. Accordingly, the rejection of independent claims 58 and 75 should be withdrawn and the claims passed on to allowance.

As to the rejections of the dependent claims, it is also well established that a claim dependent upon an allowable claim must also be allowable. Hence, the rejections of the dependent claims should also be withdrawn and those claims passed on to allowance as well.

Notwithstanding the foregoing, Applicant also wishes to specifically address the rejection of claims 82, 83, 87 and 88. As noted above, the Examiner makes the inference, if not outright assertion, that Garwin teaches the use of a single Fresnel lens with four LEDs and that a larger number of LEDs would necessarily require the use of a panel of a plurality of Fresnel lenses. Accordingly, it is asserted that Johnson, having an array of a plurality of LEDs would most certainly employ a panel of a plurality of Fresnel lenses. However, as discussed at length above, there is no such correlation to be made. Indeed, Garwin notes that other

numbers of lights can be used, but still only refers to the one lens. (Two in the case of the overlaid Fresnel lenses)

Further, since Garwin is tasked with producing a single beam of high intensity light, there is no reason to use multiple lenses as that would only result in a plurality of discrete beams of high intensity light, which, as noted above, would create hot spots which Johnson is endeavoring to overcome. Indeed, in responding to Applicant's prior response, the Examiner dismisses Applicant's argument that Garman and Pelka would suggest that the use of Fresnel lenses in Johnson would lead to the creation of "hot spots" since Garman does not mention hot spots or a panel of unshielded LEDs, and, in any event, infers that Pelka is not at issue since it was not cited in the prior rejection.

Of course Garman is silent as to hot spots as it employs a single lens, or two opposing Fresnel lenses, to capture and redirect the diffuse light from a plurality of LEDs to create a single high intensity light beam. The capture and consolidation of the light into a single beam would not create hot spots and, therefore, any mention of them is unwarranted and, frankly, quite meaningless to Garman. Similarly, the reference to shielded LEDs is likewise meaningless since Garman is trying to optimize the amount of light that is captured by its lens in order to produce a single beam of high intensity: shielding would only lessen the amount of light to be collected. Finally, as to Pelka, without question, the teachings of Pelka are indeed particularly relevant to the issue addressed by the present claims and cannot be dismissed simply because it is not cited. Pelka forms a part of the state of the art and, as such, must be part of the consideration of patentability.

Finally, in crafting an obviousness rejection, there must be motivation for all modifications being proposed. If the secondary reference does not, of itself, provide all the necessary teachings, which in this case Garman does not; then there must be additional teachings found to support the Examiner's position. Accordingly, the Examiner's clarifying phrase "with modification" is meaningless absent a clear teaching of the proposed modification and the basis or motivation for the modification. Here, there is none, and, in fact, the teaching of the art would lead one away from what Applicant has done not towards it.

As set forth above, unexpectedly, Applicant has found that by combining a first panel comprising an array of LEDs, a second panel comprising a plurality of Fresnel lenses, and a third panel, a diffuser panel, one is able to provide high intensity, uniform backlighting.

Thus, prima facie obviousness has not been established as Applicant has constructed an apparatus using elements that one skilled in the art would have thought inappropriate for the application and, unexpectedly, found that this construction provides superior intensity and uniformity as compared similar apparatus whose LED light intensity is the same but which do not employ the Fresnel lenses. Accordingly, the rejections should be withdrawn and the claims passed on to allowance.

Johnson et. al. in view of Garwin et. al. and further in view of Shimada et. al.

Claims 51, 54, 64, 65 and 79 stand rejected under 35 USC §103(a) as being unpatentable over Johnson et. al. (US 6,439,731, hereinafter “Johnson”) in view of Garwin et. al. (US 5,949,402, hereinafter “Garwin”), and further in view of Shimada et. al. (US 6,020,867, hereinafter “Shimada”).

Johnson and Garwin are applied as discussed above. However, the combined teachings are said not to disclose that the diffuser panel is made of polycarbonate or glass. However, Shimada et. al. is said to disclose that a diffuser panel disposed in front of a backlighting apparatus may be formed of a transparent member such as polycarbonate or glass in order to provide a large area planar distribution showing a high luminance and a good viewing angle. Accordingly, it is asserted that it would have been obvious to one of ordinary skill in the art to modify the illumination apparatus of Johnson et. al. by employing a glass or polycarbonate diffuser in order to realize high luminance and good viewing angle characteristic.

Re claims 53, 66 and 67, it is asserted that Shimada et. al. disclose the use of a front plate to protect the LCD panel wherein the protective panel is comprised of reinforced glass.

Applicant respectfully traverses the rejections.

It is well established in Patent Law that a claim dependent upon an allowable claim must likewise be allowable. As discussed above, Applicant’s claims are patentable over Johnson in view of Garwin as the combination in no way suggests, motivates or makes obvious Applicant’s claimed invention. Since claims 51, 54, 64, 64 and 79 are all dependent upon allowable independent claims, they too are likewise allowable. Accordingly, the rejections should be withdrawn and the claims passed on to allowance.

Johnson et. al. in view of Garwin et. al. and further in view of Abileah et. al.

Claim 57 stands rejected under 35 USC §103(a) as being unpatentable over Johnson et. al. (US 6,439,731, hereinafter “Johnson”) in view of Garwin et. al. (US 5,949,402, hereinafter “Garwin”), and further in view of Abileah et. al. (US 7,280,102, hereinafter “Abileah”).

Johnson as modified by Garwin is said to teach the present apparatus is being applicable to a flat panel display. However, it is acknowledged that the teachings do not suggest that the display is an organic display. However, Abileah, Fig. 1, is said to disclose a display device comprising an illumination apparatus with LEDs, a diffuser and a display panel wherein the display panel can be an LCD, plasma display, organic display, EL display, etc. Accordingly, it is asserted that one of ordinary skill in the art would appreciate that the display panel could be an organic display panel to fit the intended application.

Applicant respectfully traverses the rejections.

It is well established in Patent Law that a claim dependent upon an allowable claim must likewise be allowable. As discussed above, Applicant’s claims are patentable over Johnson in view of Garwin as the combination in no way suggests, motivates or makes obvious Applicant’s claimed invention. Accordingly, claim 57 being dependent upon claim 58, which applicant believes is allowable, must likewise be allowable and the rejection should be withdrawn and the claim passed on to allowance.

Johnson et. al. in view of Garwin et. al. and further in view of Shimada et. al., Mandler et. al., Wilson et. al., Suga et. al., and Dushane et. al.

Claims 84-86 and 89-91 stand rejected under 35 USC §103(a) as being unpatentable over Johnson et. al. (US 6,439,731, hereinafter “Johnson”) in view of Garwin et. al. (US 5,949,402, hereinafter “Garwin”), and further in view of Shimada et. al. (US 6,020,867, hereinafter “Shimada”), Mandler et. al. (US 7,084,935, hereinafter “Mandler”), Wilson et. al. (US 5,940,152, hereinafter “Wilson”), Suga et. al. (US 6,445,504, hereinafter “Suga”), and Dushane et. al. (US 6,032,867, hereinafter “Dushane”). Johnson and Garwin are said to teach the current apparatus with the exception of the claimed limitations as to the thicknesses of the specific panels and assembly of panels. In relation to claims 84 and 89, the tertiary references are all cited as allegedly teaching the respective panels and/or combinations thereof of varying thickness. According to the Examiner, it would have been obvious to

employ panels of the disclosed thicknesses in combination so as to arrive at Applicant's claimed apparatus. In relation to claims 85, 86, 90 and 91, the cited references are acknowledged as not teaching the thickness of the LED panel and display panel being 0.5 inch thick and the thickness of the diffuser panel, cover panel and Fresnel lens panel each being 0.0625 inch thick; however it is asserted that absent some showing of how any differences in the dimensional aspects of the apparatus would make a difference in the performance thereof, there is no patentable distinction.

Applicant respectfully traverses the rejection and requests reconsideration.

As with the prior rejections, it is well established in Patent Law that a claim dependent upon an allowable claim must likewise be allowable. Inasmuch as Applicant's independent claims are patentable over Johnson in view of Garwin, so too must Applicant's dependent claims, including claims 84-86 and 89-91. Accordingly, the rejection of these claims should be withdrawn and the claims passed on to allowance.

Notwithstanding the foregoing, Applicant wishes to point out that the rejection seems premised upon the Examiner identifying a plurality of references, each of which makes reference to an element or a somewhat equivalent element to the elements claimed by Applicant, from which the Examiner has selected those elements and their dimensions which correspond to those set forth by way of Applicant's claim limitations. While the outtakes from these references are, for the most part, accurate (Note, e.g., the 0.5 mm dimension of the LED panel attributed to Mandler actually refer to the substrate upon which the LEDs are mounted, not the LED panel -- See col. 4, lines 1-7 and lines 17-21), they fail to put the recitations in their proper context. It is one thing to pull an element from a reference simply because it meets a limitation in a claim and something entirely different to understand the element, its structure, dimensions, use and purpose in the reference from which it is taken in order to fully appreciate whether its use is, in fact, appropriate for establishing prima facie obviousness. For example, simply having three references, the first of which teaches Ax, the second of which teaches Bx and the third teaches Cx, does not provide any motivation for the combination of Ax, Bx and Cx. More is needed. Regardless, Applicant firmly believes that with a little effort, Applicant could similarly identify just as many references which specify markedly different dimensions for the very same or equivalent elements. The fact is that each of these tertiary references stands on its own and there is no suggestion or motivation

(absent hindsight engineering based on Applicant's teaching) to combine them as presently claimed. Prima facie obviousness is not founded on the mere fact that one can find all the elements from multiple sources; but, rather requires that there must be some teaching or motivation to combine the multiple sources, to select the specific elements required, to arrive at the claimed invention and all of its limitations, and to expect the results to be attained. The Office Action fails to do this and, hence, the prima facie obviousness rejection of these claims also fails in this regard and the rejection should be withdrawn and the claims passed on to allowance.

CLAIMS FEES

By this foregoing amendment, Applicant has cancelled two dependent claims and added one independent claim and one dependent claim. Hence there is no net change in the total claims presented. Further, as the number of independent claims remaining after the amendment is 3, there is not excess of independent claims beyond that previously paid for. Hence, no additional claims fees are due.

EXTENSION OF TIME

Applicant hereby petitions for a one (1) month extension of time extending the period for response from April 10, 2011 to and including May 10, 2011. The fee for the Extension of time in the amount of \$65.00 will be made concurrent with the electronic submission of this response.

CONCLUSION

As discussed at length above and in Applicant's prior response, the cited art fails to establish prima facie obviousness of the presently claimed invention. Specifically, the cited art fails to teach or motivate one to do as Applicant has done: indeed, if anything, the art would lead one away from what Applicant has done. The Examiner has provided not suitable motivation for the modifications suggested or the selection of individual elements from a large plurality of references to reassemble Applicants claimed apparatus. Furthermore, and in any event, the cited art fails to provide any reasonable expectation as to the results attained by Applicant. Accordingly, the present claims present patentable subject matter and it is respectfully requested that the rejections be withdrawn and the claims passed on to allowance.

Applicant believes that this response is fully responsive to and fully overcomes the rejections raised. Should this belief be in error and/or there remain any issues requiring further resolution, the examiner is respectfully requested to contact the undersigned attorney at (781) 718-9512 to discuss the same.

Respectfully Submitted

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